

Caixi Xi's Notebook

07/11/16

Work finished:

1. Read the second part of gene circuit, clear up in detail and understand deeply the article.

Problem unsolved:

1. Discuss problems with teammates.
2. Totally understand the second part of gene circuit.

07/12/16

Work finished:

1. Clear up the second part of gene circuit, divided it into Pap and its influential elements, simplified system, building of four states, obtaining propensity function and reaction array, and programming.
2. About building of reaction array, understand how we can get the diagonal and in diagonal data via three equations.
3. Scan the first part of gene circuit model and gene circuit example.

Problem unsolved:

1. Cannot realize the reaction array in actual operation.
2. Cannot calculate successfully the differential equation of time and x-state.
3. Cannot understand how to obtain the data in array in actual operation.

07/13/16

Work finished:

1. Consolidate the second part of gene circuit model and explain it to my teammates.
2. Clear up and understand the application of Pap gene circuit, building propensity function and reaction array.
3. Read the third part of gene circuit model, distinguished it from the second part in terms of the amount of Irp protein and PapI.

Problem unsolved:

1. Grasp the building of chemical master equation and the usage of it in obtaining reaction array in gene circuit model.
2. Need to use mathematic to practice the whole process.

07/14/16

Work finished:

1. Read and understand the second and third part of gene toggle switch.
2. Clear up the above part.
3. Comprehend that how to solve first-order differential equation via Euler algorithm and Runge-Kutta algorithm.

Problem unsolved:

1. Cannot apply the 'ode' function in MATLAB to make u/v steady state image.

07/15/16

Work finished:

1. Scan and understand the work of insulation and RiboJ.
2. Comprehend the conception of transfer function and logic gate.
3. Understand that the main effect of insulation is to cut down the different 5'-UTR sequence

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- for different promoter, which can make the output activity a constant.
4. Understand the structure of RiboJ.
 5. Comprehend the conception, function and mechanism of hammerhead ribozyme.

07/16/16

Work finished:

1. Scan and understand the third part of gene circuit model.
2. Comprehend the reaction equations and reaction kinetics equations of Papl's combination and separation.
3. Comprehend the Markov process, that is, reactions between molecules are random.
4. Comprehend the simulation algorithm FSP and the two theorems.
5. Grasp relative instruments and theory about input measurement in gene circuit.

Problem unsolved:

1. Cannot understand the difference between image of which abscissa is μ and probability image.
2. Cannot understand the specific operation of normalization method.

07/18/16

Work finished:

1. Read carefully about SYSU wiki in 2014 and 2015.
2. Read the fourth part of gene toggle switch model. Understand the report by teammates about the fourth part of gene toggle switch and 5'-UTR.

Problem unsolved:

1. Cannot understand the concrete meaning of formulas in ordinary differentiate equation.

07/19/16

Work finished:

1. Read carefully about Oxford wiki in 2014.
2. Find the source of data in documents and the concrete theory in 15st model.
3. Clear up my work and understand the report by teammate about core algorithm.

Problem unsolved:

1. The fluorescence intensity image of DCM's assumption to Ldcma in biosensor model.

07/20/16

Work finished:

1. Read carefully about Averett University wiki in 2012.
2. Find the source of data in documents and the concrete theory in 14st model.

Problem unsolved:

1. How the model check auxin.
2. How the dIAA become auxin.

07/21/16

Work finished:

1. Read carefully about ETH wiki in 2012.
2. Find the source of data in documents and the concrete theory in 16st and 17st model.

Problem unsolved:

1. How the LovTAP/Cph8 and UVR8-TetR model reflect the ultraviolet Intensity.

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07/22/16

Work finished:

1. Read carefully about Uppsala University wiki in 2014.
2. Find the source of data in documents and the concrete theory in 18st model.

Problem unsolved:

1. How to understand the last several histograms.

07/23/16

Work finished:

1. Read carefully about Freiburg University wiki in 2013.
2. Find the source of data in documents and the concrete theory in 19st model.

Problem unsolved:

1. How to understand the connection between dCAS-KRAB web model and toolkit.

07/25/16

Work finished:

1. Read carefully about supplementary material.
2. Read the second part A, B carefully and summary some contents.

Problem unsolved:

1. Cannot understand the relationship among RBS, scar, and 5'-UTR.
2. Cannot understand the relationship between insulator sequence and above parts.

07/26/16

Work finished:

1. Continue to read supplementary material.
2. Read the second part C, D carefully and summary some contents.
3. Do the video plan for human practice.

Problem unsolved:

1. Cannot understand what is the transfer function of the NOT gate.

07/27/16

Work finished:

1. Integrate and supplement the summary of supplementary material.
2. Read another supplementary material and solve the issues.
3. Make video tasks in detail and complete task assignment.

Problem unsolved:

1. There are differences between two literatures about the same contents.

07/28/16

Work finished:

1. Make PPT about supplementary material to show.
2. Read filter information.

Problem unsolved:

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1. Don't be skilled application for the FSP algorithm.

07/29/16

Work finished:

1. Look at the previous summary and understand them deeply and comprehensive.
2. Understand the FSP algorithm all process, and know the difficulties and problems.

Problem unsolved:

1. Cannot find a formula to unify different models.

08/01/16

Work finished:

1. Prepare the content to be reported tomorrow.
2. Clear up the specific meaning in ODE and parameters of SYSU software projects in 2014 and 2015.

Problem unsolved:

1. The relationship between 2014 and 2015.

08/02/16

Work finished:

1. Clear up ODE models and make it clear by living examples.
2. Prepare to simulate a model in SYSU data.

Problem unsolved:

1. Cannot realize via MATLAB.

08/03/16

Work finished:

1. Simulate the model of Uppsala University.
2. Simulate the gene switch model of double repressors.

Problem unsolved:

1. Whether some parameters like Hill Coefficient should appear in simulation.

08/04/16

Work finished:

1. Simulate the gene switch model of University of Science and Technology of China, and explore the origin of parameters.

Problem unsolved:

1. Our model assumption is unclear, therefore, the parameters and elements to be considered are unknown, and the final ODE model's form is unclear.